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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,385	02/15/2002	Miron Tuval	TUVOL=1	7231

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EXAMINER

SANDERS JR, JOHN R

ART UNIT PAPER NUMBER

3737

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,385

Applicant(s)

TUVAL, MIRON

Examiner

John R. Sanders

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6262002 and.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II in the reply filed on 17 March 2004 is acknowledged. The traversal is on the ground(s) that the MPEP

"requires the search and examination of an entire application, even though the restriction requirement is correct, if such a search and examination would not impose a "serious burden". Applicant believes that the claimed (presently non-elected) method involves use of the elected system/apparatus, i.e. the two are closely related to one another, whereby examination of the apparatus would require full consideration of the method."

This is found persuasive in view of the prior art relied upon by the Examiner in this Action being directed to the unifying feature of the method and apparatus, i.e. that a foveal image is projected such that the number of image elements of said foveal image corresponds to the number of cone photoreceptors of the viewer's fovea.

The previous restriction requirement is hereby withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 6-9, 46 and 47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

4. It is known that the fovea centralis has a higher number of cone photoreceptors than the rest of the retina and is therefore able to distinguish an image at a higher resolution. The prior art admissions by Applicant disclose this relationship. Applicant states that the fovea comprises 75,000-200,000 cone photoreceptors (page 3, lines 4-6) and that the response to multiple images on a cone is governed by the Ives-Cobb effect (page 5, 18-24). Applicant seeks protection for an invention which creates images with elements corresponding to the number of cones in the fovea. A specific correspondence of one-to-one or four-to-one as claimed is not enabled for a range such as 75,000-200,000. The specification contains no reference to how a specific number of cones (or optical fibers) can be determined for a particular user in order for one of ordinary skill in the art to display the images according to the claimed specific correspondences.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 40-42, 44, 45, and 48-51 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,422,653 to Maguire Jr. (“Maguire Jr.”).**

7. Maguire Jr. discloses a method for projecting non-uniform resolution images into the eye including a head-mounted stereoscopic virtual display apparatus. FIGS. 23-25 depict the type

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and form of head-mounted display generally supported by Maguire Jr., which include the limitations of a display surface, projection optics, and a corporally mounted housing. FIG. 23 depicts a curved display surface. Maguire Jr. discloses multiple transmittable LCD screens (col. 38, lines 1-46).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 1-5 and 10-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0101612 A1 to Lauper et al. ("Lauper") in view of Maguire Jr.**

10. Regarding claims 1-5, Lauper discloses a method for the transmission of image data concerned primarily with using only the maximum resolution for the image area projected onto the fovea, based on the physiological characteristics of the human eye (par. 3). Lauper discloses first and second image data corresponding to the high and low-resolution image areas that are superimposed and simultaneously reproduced (par. 8-12).

11. Lauper discloses result image data with differing resolution areas according to a foveal function. This function, designed to compress the image such that higher resolution is displayed at the viewing position (corresponding to the fovea), inherently alters the image according to the physiology of the eye. It can always be said that an image projected into the eye to constitute a

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foveal image has a number of image elements that *correspond* to the number of cone photoreceptors in the eye. Applicant defines “correspond” on page 20, lines 25-27, as “not necessarily one to one”. As such, the result image from the function of Lauper creates image resolutions that inherently correspond to the number of cones in some manner or ratio.

12. Regarding claims 20-26, Lauper discloses sequential image data and Digital Video Broadcasting image data as being used in conjunction with the compression procedure also disclosed by Lauper. Applicant also discloses prior art to Lauper concerning the transmission of video (page 4, line 21 - page 5, line 7).

13. Regarding claims 30-34, Lauper discloses transmission of the image data over various communication networks, including cellular (par. 31).

14. The preferred embodiment of Lauper discloses a Virtual Retina Display (VRD) that projects the images onto the retina of the eye after signal transmission (par. 34). Lauper does not disclose expressly structural limitations regarding the VRD.

15. Regarding claims 10-21, Maguire Jr. discloses a stereoscopic projection apparatus and method for providing non-uniform resolution images capable of projecting images substantially simultaneously to both eyes of the viewer. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the apparatus of Maguire Jr. to project the non-uniform resolution images created according to the foveal function, as in Lauper.

16. **Claims 43 and 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maguire Jr**

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17. Maguire Jr. discloses the aforementioned limitations, but does not disclose expressly images displayed at 10 Hz, 13 Hz, or an intermittent light source. However, these limitations regarding the frequency and intermittency of the video image projected by the device are within the current art and are capably performed and would have been obvious to one of ordinary skill in the art to be performed by an exemplary head-mounted device such as in Maguire Jr.

Conclusion


18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ferguson (US 5,808,589) discloses a head-mounted display combining high and low resolution images. Rallison et al. (US 6,160,666 and US 5,903,395), Richards (US Pub. 2002/0030636), Stuttler (US 6,580,448), Takeyama (US 6,512,635), Tosaki (US 5,844,530) and Trumbull (US 6,454,411) disclose embodiments of the current art pertaining to virtual display systems and methods, including various examples of display and optical projection means for projecting video images into the eye. Kay et al. (US 6,175,352) discloses specific hardware for allowing variable resolution images to be formed by a spatial light modulator.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John R. Sanders whose telephone number is (703) 305-4974. The examiner can normally be reached on M-F 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (703) 308-3552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


jrs


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